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ABSTRACT

The Asian Network for Biological Sciences (ANBS) is a group of institutions, laboratories, research centers, and scholars who are willing to cooperate in programs and activities aimed at improving teaching and research in the biological sciences. This publication: (1) outlines ANBS aims and objectives; (2) describes major activities in the past; (3) lists programs for 1986 onwards; (4) lists ANBS council members (1983-1986) and International Biological Network steering committee members; and (4) provides a list of relevant publications and those that are in press. Included in 11 appendices are the covers and/or tables of contents for several publications (including conference proceedings). They include "Bioscience Education in Developing Countries"; "Tissue Culture of Economically Important Plants"; "Plant Viruses and Mycoplasmas"; "Proceedings of the Seminar Scientific Approach to Traditional Medicine"; "Proceedings of the Symposium on Research in Biology and Biotechnology in Developing Countries"; and "Teaching Science Out-of-School with Special Reference to Biology." (JN)

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ASIAN NETWORK FOR BIOLOGICAL SCIENCES

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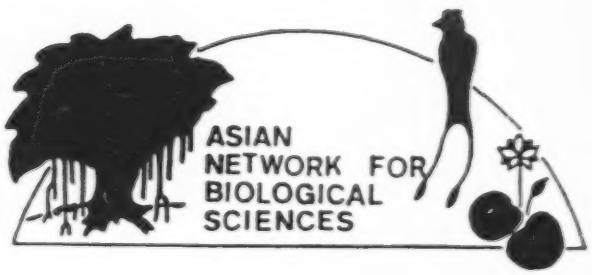

ASIAN NETWORK FOR BIOLOGICAL SCIENCES

The Asian Network for Biological Sciences (ANBS) is a group of institutions, laboratories, research centres and scholars willing to co-operate in the programmes and activities aimed at improving teaching and research in biological sciences. The aims and objectives of the Network are:

1. To identify, strengthen and co-ordinate relevant areas of research and promote their application.
2. To facilitate exchange of information on areas of biological sciences.
3. To set up regional centres for specific areas in Biology.
4. To facilitate the exchange of active scientists and technicians.
5. To promote training programmes in specific fields recognised as priorities for Asia.
6. To promote and strengthen research and teaching in frontier as well as applied areas of Biology.

The main function of the Network is to accelerate the growth and application of biological research in Asia, subject to the availability of funds.

The Asian Network for Biological Sciences (ANBS) was set up in 1978 by the Committee on Science and Technology in Developing Countries (COSTED), a Committee of the International Council of Scientific Unions (ICSU) and with the assistance and support of UNESCO. It is endeavouring to implement the programmes in areas of biology which are of relevance to Asia.

The Asian Network will function through ANBS Council and will have a contact point in every country of the region. The Council will be responsible for the preparation and implementation of its programmes, projects and activities. The Council shall meet once annually, preferably in different countries each time, along with some other activity like a seminar, symposium, conference, training course, workshop etc.

In order to establish closer links with IBN and the other regional networks a meeting was held in Bangkok under the chairmanship of Professor Richard Keynes.

Mdm Julia Marton-Lefèvre organised the meeting in National Research Council of Thailand, Bangkok (April 27-28, 1983). Members of ANBS Council for 1983-86 were present.

A revised Constitution was also prepared for ANBS, keeping in line with IBN and other regional networks.

As one of the four co-ordinated bodies of International Biosciences Networks (IBN) ANBS functions under the general guidelines of IBN Council and works closely with other regional networks like Latin American Network, African Biosciences Network and Arab Biosciences Network. ANBS will also continues to work very closely with COSTED which has supported its activities since inception.

The following activities are envisaged in the immediate future.

1. Workshops, seminars and training programmes.
2. Preparation and publication of proceedings of the meetings, textbooks, monographs, laboratory manuals and teaching aids.
3. Travel and research fellowship programme for young scientists.
4. Preparation of a Directory of Experts, Resources and Institutions.
5. Setting up centres in specific areas of relevance eg. Instrumentation Centre, Curriculum Development Centre.

A network of institutions will be developed to strengthen teaching and research activities. For each programme and activity, a co-ordinator will be nominated. The programmes identified as relevant to the Asian region are:

A. BioScience Education:

Objectives:

a. To bring about the necessary and desirable integration of biological disciplines.

b. To stress on Biology for human welfare with reference to population, health, environment and improvement in quality of life.

c. Biology and its application to economic development.

Programmes:

a. Curriculum development and reform or restructuring of courses.

b. Production of materials for teaching (at the University level) - books, manuals, teaching aids, demonstration and laboratory equipment.

Activities:

a. Information dissemination.

b. Exchange of materials developed.

c. Workshops, seminars and training programmes on specific topics.

B. Research participation and collaborative research in the following areas of importance to development (both basic and applied aspects):

1. Biomass Production and Utilization

a. Bioproductivity (tropical and sub-tropical areas) - forest, aquaculture, mangroves, arid zones.

b. Bioenergy processes - photo-biology, photosynthesis.

c. Biotechnology, waste utilization, plant tissue culture and genetic engineering.

d. Plant and animal growth, development and distribution.

2. **Microbiology with Specific Reference to the Food and Energy Crisis**

a. Microbial products of food and nutritional value.

b. Microbes, food preservation and spoilage.

c. Microbial energy sources - fermentation, biogas and alcohol production.

d. Microbial genetics - nitrogen fixation, development of microbial cultures, recombinant DNA technology.

e. Improvement in the quality of plants and animals, food resources.

3. **Biology of Human Populations**

a. Research leading to fertility control.

b. Nutritional deficiency and human development.

c. Biology of tropical diseases.

d. Environmental biology.

4. **Wildlife Biology and Conservation - Rather than Management Activities:** Seminars, training programmes and workshops in the conservation of genetic resources.

MAJOR ACTIVITIES IN THE PAST

1. A seminar was organised in Singapore on BioScience Education in Developing Countries from April 17-20, 1978. About 30 papers were presented by about 50 participants from 16 countries representing Asia, Africa and other international organisations. The proceedings of the seminar was published in June of the same year (Appendix 1).
2. A meeting of 28 invited experts from 10 developing countries was convened by COSTED, to consider research priorities for developing countries in the area of Biosciences. The meeting was locally organised by BIOTROP (Regional Institute of Tropical Biology) in Bogor, Indonesia and was sponsored by UNESCO in 1979.

The existing research programmes, possible research priority areas to be strengthened/started were discussed in the subject areasof agriculture, health and natural resources. The role which specific bioscience research programmes can play in these subject areas was also discussed.

The topics discussed were as follows:

i. Biochemical instrumentation for biologists.
ii. Agriculture and marine resources utilization.
iii. Biological control of food crop pests.
iv. Aquaculture.
v. Diarrhoeal problems in developing countries.
vi. Aquatic weed utilization.
vii. Agricultural by-product utilization.
viii. Postharvest technology.

3. A Symposium on Organismic Adaptation to Tropical Environments was conducted at Madurai Kamaraj University, Madurai, India from October 24-26, 1979. About 20 papers were presented from the different participants.

4. In April 23-27, 1980, a Select Committee Meeting was held in Madras, India to consider the important aspects of scientific research and training relevant to Asian conditions. As regards Biology, microbial genetics, bioengineering, immunobiology, ecosystem studies and molecular biology were identified to formulate the future training programmes and workshops.

5. A two-day Symposium on Medicinal Plants of the Tropics was held in Singapore on December 4-5, 1980. Twenty participants from India, Singapore, Philippines, Malaysia, Indonesia and Thailand gave status reports on research in medicinal plants in their respective countries. There were eight major and two short papers. The proceedings is published in the Journal of Singapore National Academy of Science, Vol. 13, 101-151 (1984) (Appendix 2).

6. A Regional Workshop on Light Microscopic Techniques for Biologists was conducted in Department of Anatomy and Microbiology, Madras University, Madras, India. The emphasis was on human tissues. 12 biology teachers involved in teaching human anatomy attended the course from March 26 - April 4, 1981. They were from Sri Lanka, Malaysia, Thailand and India. Prepared slides were sent to different institutions to help them in their teaching work.

7. An International Symposium on Tissue Culture of Economically Important Plants was held in Singapore from April 28-30, 1981. More than 50 papers were presented and discussed by about 60 participants from 16 different countries. The proceedings was published with the financial help given by Lee Foundation, Singapore and the Commonwealth Foundation, London (Appendix 3).
8. A Workshop Meeting on Microbiological Aspects of Biogas Technology was held at Kathmandu, Nepal from May 27 - June 1, 1982. Scientists from different Asian countries participated.
9. Workshop on Pharmacological and Biochemical Approaches to Medicinal Plants was organised by Professor S Krishnaswamy in 1982 in Madurai, India.
10. A Workshop on Plant Viruses and Mycoplasmas was held from May 24-27, 1983. Altogether 23 participants and observers from eight different countries in Asia attended the Workshop. The objectives of the Workshop were fulfilled and the proceedings of the Workshop is published (Appendix 4).
11. A one-day Seminar on Scientific Approach to Traditional Medicine was organised at Universiti Pertanian Malaysia on April 30, 1983. Eight papers were presented and a panel discussion was held. There were 30 participants representing different disciplines. The proceedings is published in English and Malay; edited by Dr M Marziah (Appendix 5).
12. A Symposium on Research in Biology and Biotechnology in Developing Countries was held in Singapore from November 2-4, 1983. More than 106 papers were presented and discussed by about 150 participants from 14 different countries. The proceedings is published (Appendix 6).
13. A Regional Seminar on Development of Techniques for Analysis of Tropical Cities on an Ecosystem Basis was conducted in Universiti Kebangsaan Malaysia from November 24-26, 1983. 26 participants from Australia, Canada, England, France, Indonesia, Malaysia, Philippines, Singapore and Thailand participated in the Seminar. There were six papers presented on the ecosystems of Jakarta, Kuala Lumpur, Manila, Singapore and Bangkok. The proceedings is published (Appendix 7).
14. A Regional Workshop on Characterization Techniques in Biochemistry and Chemistry of Natural Products was conducted in Bangkok, Thailand from November 28 - December 2, 1983. 13 participants from the Asian countries participated in the Workshop.

15. An International Conference on Ecological Aspects of Solid Waste Disposal was conducted in the Biology Department, The Chinese University of Hong Kong, December 19-22, 1983. 36 papers were presented and discussed by 102 participants from 15 different countries. The proceedings is published by Pergamon Press, Oxford (Appendix 8).
16. Support for travel and subsistence was extended to seven participants from Malaysia, India, Indonesia, Iran, Nepal and Thailand to participate in the Third Asia-Pacific Conference on Electron Microscopy held in Singapore, August 29 - September 2, 1984. (Appendix 9).
17. A three-day Workshop on Tissue Culture Technology was conducted in Chulalongkorn University, Bangkok, Thailand from March 18-20, 1985. 14 participants from Australia, India, Indonesia, Japan, Malaysia, Philippines, Singapore and Thailand participated in the Workshop.
18. A Workshop on Ecology and Management of Aquatic Vegetation in the Tropics was conducted in the Rawamangun Campus, University of Indonesia from March 26-29, 1985. The workshop was attended by 51 participants from nine countries.
19. A Workshop on Micro-computers in Biological Education was conducted in Madras, India, April 15-18, 1985. Ten participants from Bangladesh, India, Nepal and Singapore participated in the workshop.
20. A Workshop on Applied Mycological Research in the Tropics was conducted in Botany Department, National University of Singapore from May 6-8, 1985. 11 participants from India, Indonesia, Malaysia, Philippines, Taiwan, Thailand, Sri Lanka and Singapore participated in the Workshop.
21. Support for travel and subsistence was extended to two participants from Nepal and Hong Kong to participate in the Training Course on Current Techniques for Ecophysiological Studies of Plants conducted in Botany Department, National University of Singapore from May 20 - June 21, 1985.
22. A Workshop on Seaweed Research in South East Asia was conducted in the Marine Science Centre, University of the Philippines in Diliman City, Philippines from June 17-20, 1985. Eight participants from India, Indonesia, Japan, Malaysia, Philippines, Sri Lanka, Singapore and Thailand participated in the workshop.

Occasional meetings of small group of biologists from different countries in Asia were held and the following topics were discussed in relation to their relevance to teaching and research and for the improvement of quality of life in general.

1. Plants and animals as renewable sources of materials and energy.
2. Control of human population growth.
3. Preservation of ecological balance and prevention of environmental degradation.
4. Different aspects of Biotechnology useful for developing countries to solve the problems of food, poultry and other necessities, utilization of waste materials.
5. Coordinated research and advanced training in different biological areas.
6. Directory of Asian Biologists and available resources.
7. Training of technicians for biology laboratories.
8. Improvement of teaching materials.
9. Publication of suitable textbooks for developing countries in Asia and the tropics.
10. Environmental education - teaching techniques.

Such discussions and meetings no doubt have produced many valuable papers. Many of them have been distributed in the form of handouts. Others are yet to be edited and published so that the information becomes available to all those who need it.

CENTRES OF EXCELLENCE

Two centres have been set up with moral and financial support from ANBS and COSTED.

1. Centre for Photosynthesis at Madurai Kamaraj University, India.
2. Scientific Instrumentation Centre for Biological Research at Chulalongkorn University, Thailand.

There are proposals to start four more new centres in Malaysia - Legume Biology, in Indonesia - Environmental Biology, in Hong Kong - Waste Recycling and in Singapore - Plant Tissue Culture.

LOGO

A logo printed on the first page was adopted for ANBS. It includes a banyan tree, a lotus flower, leaves and a bud and a bird - the large Racquet-tailed Drongo - Dissemurus paradisens. All these are mostly, if not typically Asian.

PROGRAMMES FOR 1986 ONWARDS

1. Environmental Toxicology (Bioassay techniques for testing water quality), Hong Kong. (Responsible: M H Wong).
2. HLA Typing, Madurai, India. (Responsible: S Krishnaswamy).
3. Hybridoma Technology (with Microbiology Network), Bangkok, Thailand. (Responsible: T Vajrabhaya, P Matangkasombut).
4. Instrumentation Workshop for Biological Sciences, Bangkok, Thailand. (Responsible: T Vajrabhaya).
5. Training Workshop on Measurement of Bioproductivity (photosynthesis), Madurai, India. (Responsible: S Krishnaswamy).
6. Seminar on Ecology and Environmental Sciences for Biology Teachers, Kuala Lumpur, Malaysia. (Responsible: Abdul Latiff Mohd).
7. Research project on Ecological Aspects of Bacterial Flow of Mangrove Waters (with Mangrove Project), Dhaka, Bangladesh. (Responsible: Aziz, M Vannucci).
8. Energy from Biomass, Bangladesh. (Responsible: M Y Chowdhury).
9. Workshop on Neurophysiological Techniques, Madurai, India. (Responsible: S Krishnaswamy).
10. Training on Basic Techniques in Genetic Engineering, Mahidol University, Bangkok, Thailand. (Responsible: T Vajrabhaya).
11. Urban Ecology, Jakarta, Indonesia. (Responsible: M Soerjani).
12. Genetic Engineering for Appropriate Vaccine Strain for Cholera, Dhaka, Bangladesh. (Responsible: Aziz).
13. Ecophysiology of Tropical Plants, Singapore. (Responsible: P N Avadhani).
14. Biology and Human Nutrition, India. (Responsible: B L Amla).
15. In Support of Centres of Excellence:
    a. Photosynthesis, Madurai, India. (Responsible: S Krishnaswamy).
    b. Instrumentation, Bangkok, Thailand. (Responsible: T Vajrabhaya).
    c. Legume Biology, Kuala Lumpur, Malaysia. (Responsible: Abdul Latiff Mohd.).
    d. Environmental Biology, Indonesia. (Responsible: M Soerjani).
    e. Waste Recycling, Hong Kong. (Responsible: M H Wong).
    f. Plant Tissue Culture, Singapore. (Responsible: A N Rao).
    g. Protoplast Culture and Genetic Engineering in Plants, Tsukuba, Japan. (Responsible: H Harada).

ANBS COUNCIL 1983-1986

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ANBS COUNCIL MEMBERS

Hiroshi Harada

Institute of Biological Sciences
University of Tsukuba
Sakura-mura, Niihari-gun
Ibaraki-ken 305
JAPAN
(Telephone: 0298-536641)
(Telex: 3652580 UNTUKU J)

S Krishnaswamy

School of Biological Sciences
Madurai Kamaraj University
Madurai 625 021
INDIA
(Telephone: [Office] 31501/33171 Ext 280)
[Home] 32539)
(Telex: 445 308 MKU MA)
(Cable: UNIVERSITY)

A N Rao

Department of Botany
National University of Singapore
Lower Kent Ridge Road
Singapore 0511
REPUBLIC OF SINGAPORE
(Telephone: [Office] 772 2711/772 2712)
[Home] 733 0937)
(Telex: UNISPO RS 33943)
(Cable: UNIVSPORE)

Rachel Rudström (Mrs)
Division of Scientific Research and Higher Education
UNESCO
7 Place de Fontenoy
Paris 75700
FRANCE
(Telephone: 568-3894)
(Telex: 204461 Paris)

S Radhakrishna
Scientific Secretary, COSTED
Department of Physics
Indian Institute of Technology
Madras 600 036
India
(Telephone: 414543/414046)
(Telex: TECHMAS-MS (041) 7362)

M Yusuf Chowdhury
Agrichemistry Department
Bangladesh Agricultural University
Mymensingh
BANGLADESH
(Telephone: 4930)
(Cable: AGRIVERSITY)

Abdul Latiff Mohamed
Department of Botany
Universiti Kebangsaan Malaysia
Bangi, Selangor
MALAYSIA
(Telephone: 03-350001 Ext 2695)
(Telex: MA 31496)
(Cable: UNIKEB)

Mohamed Soerjani
Centre for Studies of Human Resources and the Environment
University of Indonesia
Jalan Salemba 4
Jakarta
INDONESIA
(Telephone: 881334/883856 Ext 32)
(Telex: 45680 UI JKT)
(Cable: UNIV JKT)

Thavorn Vajrabhaya
Department of Botany
Chulalongkorn University
Bangkok 10500
THAILAND
(Telephone: 251-1181 Ext 234-6;
252-1731)

M H Wong
Department of Biology
Chinese University of Hong Kong
Shatin, N T
HONG KONG
(Telephone: [Office] 0-6352286/
0-6352348)
[Home] 0-6049242)
(Telex: 50301 CUHK HX)
(Cable: SINOVERSITY)

Xu Guan Ren

Institute for Application of Atomic Energy (in Agricultural Sciences)
Chinese Academy of Agricultural Sciences
P O 5109, Beijing
PEOPLE'S REPUBLIC OF CHINA
(Co-ordinator of Chinese Working Group, ANBS)
(Telex: 20035 CAST CN)

INTERNATIONAL BIOLOGICAL NETWORK

Members of IBN Steering Committee:

Chairman

R D Keynes
Physiology Laboratory
Downing Street
Cambridge University
Cambridge CB2 3EG
UNITED KINGDOM
(Telephone: 0223 64131)

Secretary

Julia Marton-Lefèvre (Mdm)
ICSU
51 Boulevard de Montmorency
75016 Paris
FRANCE
(Telephone: 525 03 29)
(Telex: 630553 ICSU F)

J Allende
Universidad de Chile
Santiago Norte Fac.
Medicina Norte Fac.
Bioquimica, Casilla 6671
Santiago 7
CHILE
(Telex: 340258 UNESCO CK)

Edward A Ayensu
Secretary-General, IUBS
Office of Biological Conservation
Smithsonian Institution
Washington, DC. 20560
USA

A T Ba
Coordinator ABN
UNESCO Bureau Regional de l'Education (BREDA)
B P 3311, Dakar
SENEGAL

F Boulière
15 Avenue de Tourville
75007 Paris
FRANCE

A N Rao
Department of Botany
National University of Singapore
Lower Kent Ridge Road
Singapore 0511
REPUBLIC OF SINGAPORE
(Telephone: [Office] 772 2711/772 2712)
[Home] 733 0937)
(Telex: UNIVSPO RS 33943)
(Cable: UNIVSPORE)

Talal Younès
Executive Secretary, IUBS
51 Boulevard de Montmorency
75016 Paris
FRANCE

Rachel Rudström (Mrs)
Division of Scientific Research and
Higher Education
UNESCO
7 Place de Fontenoy
Paris 75700
FRANCE
(Telephone: 568-3894)
(Telex: 204461 Paris)

Publications

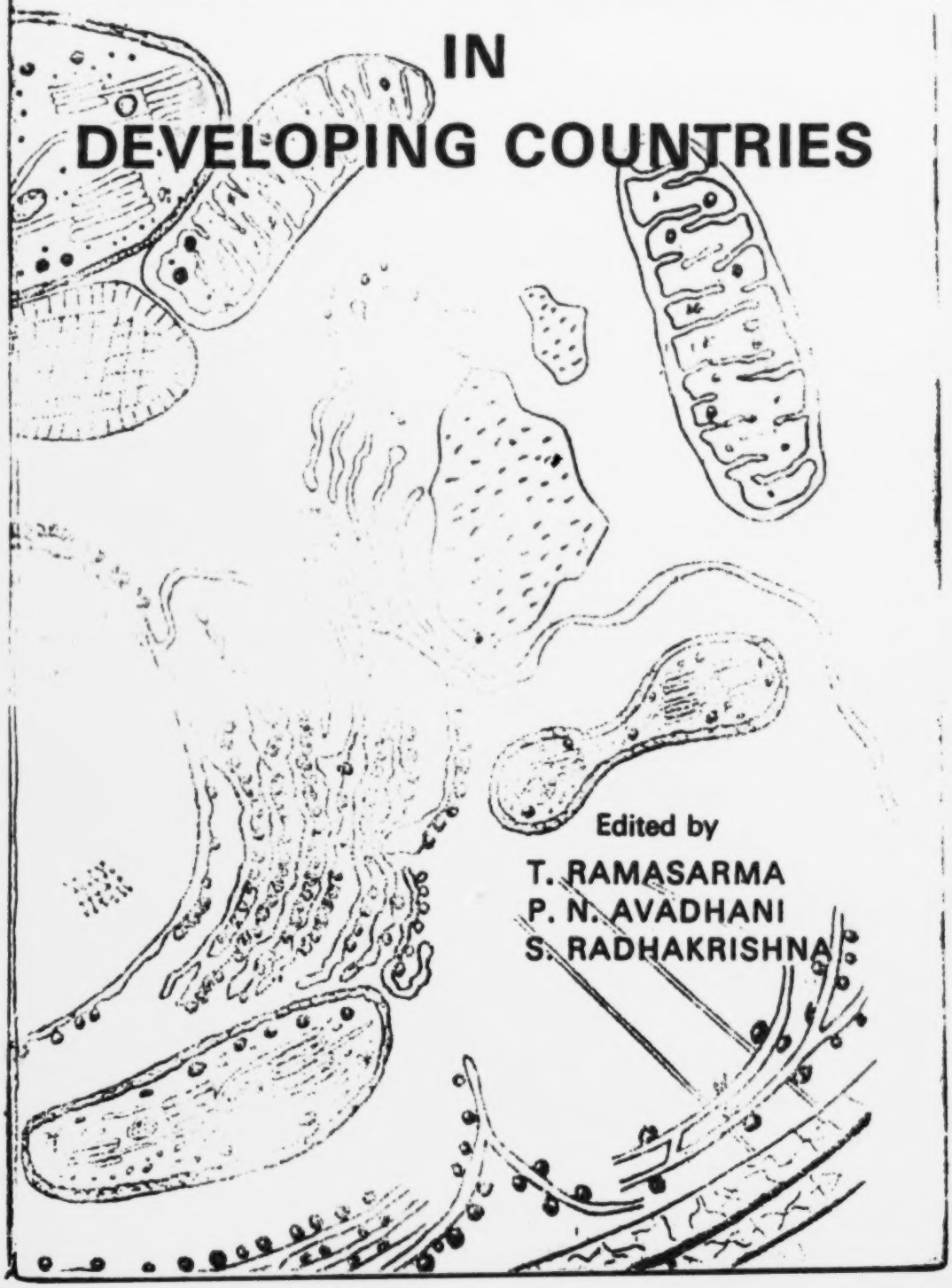
1. Proceedings of the Seminar on BioScience Education in Developing Countries, Singapore, April 17-20, 1978. (Eds.) T Ramasarma, P N Avadhani and S Radhakrishna. (230 pp).
2. Proceedings of the International Symposium on Tissue Culture of Economically Important Plants, Singapore, April 28-30, 1981. (Ed.) A N Rao. (307 pp).
3. Proceedings of the Seminar on Scientific Approach to Traditional Medicine, Universiti Pertanian Malaysia, April 30, 1983. (Ed.) M Marziah. (95 pp).
4. Symposium on Research in Biology and Biotechnology in Developing Countries, Singapore, November 2-4, 1983. (Abstracts). (95 pp).
5. International Conference on Ecological Aspects of Solid Waste Disposal. Hong Kong, December 19-22, 1983. (Abstracts). (64 pp).
6. Teaching Science Out-of-School with Special Reference to Biology. (Eds.) G Rex Meyer and A N Rao. July 1984. (162 pp) (Appendix 10).
7. Proceedings of Symposium on Research on Research in Biology and Biotechnology in Developing Countries, Singapore November 2-4, 1983. (Selected papers). (42 pp).
8. Proceedings of Workshop on Plant Viruses and Mycoplasmas, Singapore, May 24-27, 1983. (Eds.) G Lim, A N Rao, T K Tan and H H Yeoh. (119 pp).
9. Proceedings of Regional Seminar on Development of Techniques for Analysis of Tropical Cities on an Ecosystem Basis, Universiti Kebangsaan Malaysia, Bangi, November 24-26, 1983. (Eds.) A Latiff and M Omar. (125 pp).
10. International Symposium on Recycling of Organic Wastes for Fertilizer, Food, Feed and Fuel, Hong Kong, August 28-30, 1985. (Abstracts). (36 pp) (Appendix 11).
11. Proceedings of International Conference on Ecological Aspects of Solid Waste Disposal.Hong Kong, December 19-22, 1983. (Ed.) M H Wong. (376 pp).
12. Proceedings of Symposium on Medicinal Plants, Singapore, December 4-5, 1980. (Ed.) A N Rao. In: Journal of the Singapore National Academy of Science Vol. 13 (1984), 101-151.

In Press

1. Seminar on Biotechnology, Amman, Jordan, September 2-10, 1983.
2. Workshop on Tissue Culture Technology, Thailand, March 18-20, 1985.
3. Workshop on Ecology and Management of Aquatic Vegetation in the Tropics, Indonesia, March 26-29, 1985.
4. Workshop on Applied Mycological Research in the Tropics, Singapore, May 6-8, 1985.
5. Workshop on Seaweed Research in South East Asia, Philippines, June 17-20, 1985.
6. International Symposium on Recycling of Organic Wastes for Fertilizer, Food, Feed and Fuel, Hong Kong, August 28-30, 1985.

APPENDIX 1

BIOSCIENCE EDUCATION IN DEVELOPING COUNTRIES



Edited by

T. RAMASARMA
P. N. AVADHANI
S. RADHAKRISHNA

CONTENTS

	Page
PLAN AND ORGANISATION OF THE SEMINAR—*S. Radhakrishna* ..	v
INAUGURATION—*Choo Seok Cheon* ..	1
KEYNOTE ADDRESS—*S. Bhagavantam* ..	3
HEALTH NEEDS OF THE DEVELOPING NATIONS—*V. Zaman* ..	6
AGRICULTURAL NEEDS AND BIOLOGICAL EDUCATION—*N. W. Pirie.*	12
ENVIRONMENTAL PERSPECTIVES IN BIOLOGICAL EDUCATION IN DEVELOPING COUNTRIES—*J. I. Furtado* ..	18
CURRICULUM DEVELOPMENT FOR NEED-BASED BIOSCIENCE EDUCATION IN THE UNIVERSITIES—*V. S. Rama Das* ..	29
EXPERIMENTAL WORK AND INSTRUMENTATION IN BIOSCIENCE EDUCATION—*P. N. Avadhani* ..	36
RESEARCH IN BIOSCIENCES IN DEVELOPING COUNTRIES —*T. Ramasarma* ..	44
BIOSCIENCE EDUCATION IN SINGAPORE—*A. N. Rao* ..	52
BIOSCIENCE EDUCATION IN THAILAND—*T. Vajrabhaya* ..	58
SOME ASPECTS OF BIOSCIENCE EDUCATION IN INDONESIA *Mohamed Soerjani* ..	62
BIOSCIENCE EDUCATION IN THE PHILIPPINES—A STATUS REPORT —*Ruben B. Aspiras* ..	74
PROBLEMS OF BIOSCIENCE EDUCATION AT HIGH SCHOOL AND UNIVERSITY IN SRI LANKA—*R. N. De Fonseka* ..	81
BIOSCIENCE EDUCATION IN BANGLADESH—*K. M. S. Aziz* ..	88
BIOLOGICAL SCIENCES TEACHING IN INDIAN UNIVERSITIES: A PERSPECTIVE—*D. Shankar Narayan* ..	92
BIOSCIENCE EDUCATION IN EGYPT—*Mahmoud Hafez* ..	101
BIOSCIENCE EDUCATION FOR DEVELOPING COUNTRIES WITH PARTICULAR REFERENCE TO SOUTH AFRICA—*S. N. Mashego* ..	108
SOME THOUGHTS IN BIOSCIENCE EDUCATION IN DEVELOPING COUNTRIES—*M. Vannucci* ..	118
A PLEA FOR SOCIO-ECONOMIC RELEVANCE IN BIOSCIENCE EDUCATION IN DEVELOPING COUNTRIES—*S. Krishnaswamy* ..	129

Page

AN EXAMPLE OF REGIONAL COOPERATION IN BASIC SCIENCES IN SOUTH EAST ASIA—*G. Trapp* .. 132

BIOTROP AND BIOLOGICAL SCIENCE EDUCATION IN SOUTH EAST ASIA—*Ishemat Soerianegara* .. 137

SOME ASPECTS OF THE HEALTH NEEDS OF PHILIPPINES—*Manuel P. Macapinlac* .. 143

EFFICIENT HEALTH CARE INFORMATION SYSTEMS—*K. Sundaram*.. 148

FOOD SCIENCE/TECHNOLOGY AND RESEARCH AND DEVELOPMENT IN RELATION TO MALAYSIAN FOOD PRODUCTS—*Ye Swee Yean*.. 151

CHEMICAL EDUCATION IN RELATION TO ENVIRONMENT NEEDS—*Augustine S. H. Ong* .. 160

INTRODUCING ECOLOGY IN LOWER SECONDARY SCIENCE (LSS) PROGRAMME—*C. K. Cheah and N. G. Soo Boon* .. 166

BIOSCIENCE TEACHING AND RESEARCH—AN ECOLOGICAL APPROACH—*S. C. Pandeya* .. 170

BIOSCIENCE EDUCATION: A TOOL FOR ENVIRONMENTAL CONSERVATION—*Udai Raj Singh* .. 174

THE ROLE OF RESEARCH IN BIOSCIENCE EDUCATION IN THAILAND —*Yongyuth Yuthawong* .. 181

SOME BIOSCIENCE PROBLEMS CHARACTERISTIC OF DEVELOPING COUNTRIES—*P. S. Sastry* .. 186

A PROFILE OF THE SINGAPORE SEMINAR OF BIOSCIENCE EDUCATION IN DEVELOPING COUNTRIES—*T. Ramasarma* .. 202

INTERNATIONAL ORGANISING COMMITTEE .. 223

ORGANISING COMMITTEE .. 224

LIST OF PARTICIPANTS .. 227

JOURNAL OF THE SINGAPORE NATIONAL ACADEMY OF SCIENCE

VOLUME 13, 1984
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PAGE

PAPERS PRESENTED AT THE SYMPOSIUM ON MEDICINAL PLANTS, SINGAPORE, SINGAPORE, 4–5 DECEMBER 1980

A Multi-variate Approach to the Study of Medicinal Plants in Malaysia
Abdul Latiff, G Ismail, M. Omar, I M Said and A Kadri 101

Current Status of Research on Medicinal Plants in India
Akhtar Husain 109

Research on Medicinal Plants in Indonesia
I Lubis and Mh Sri Prana 114

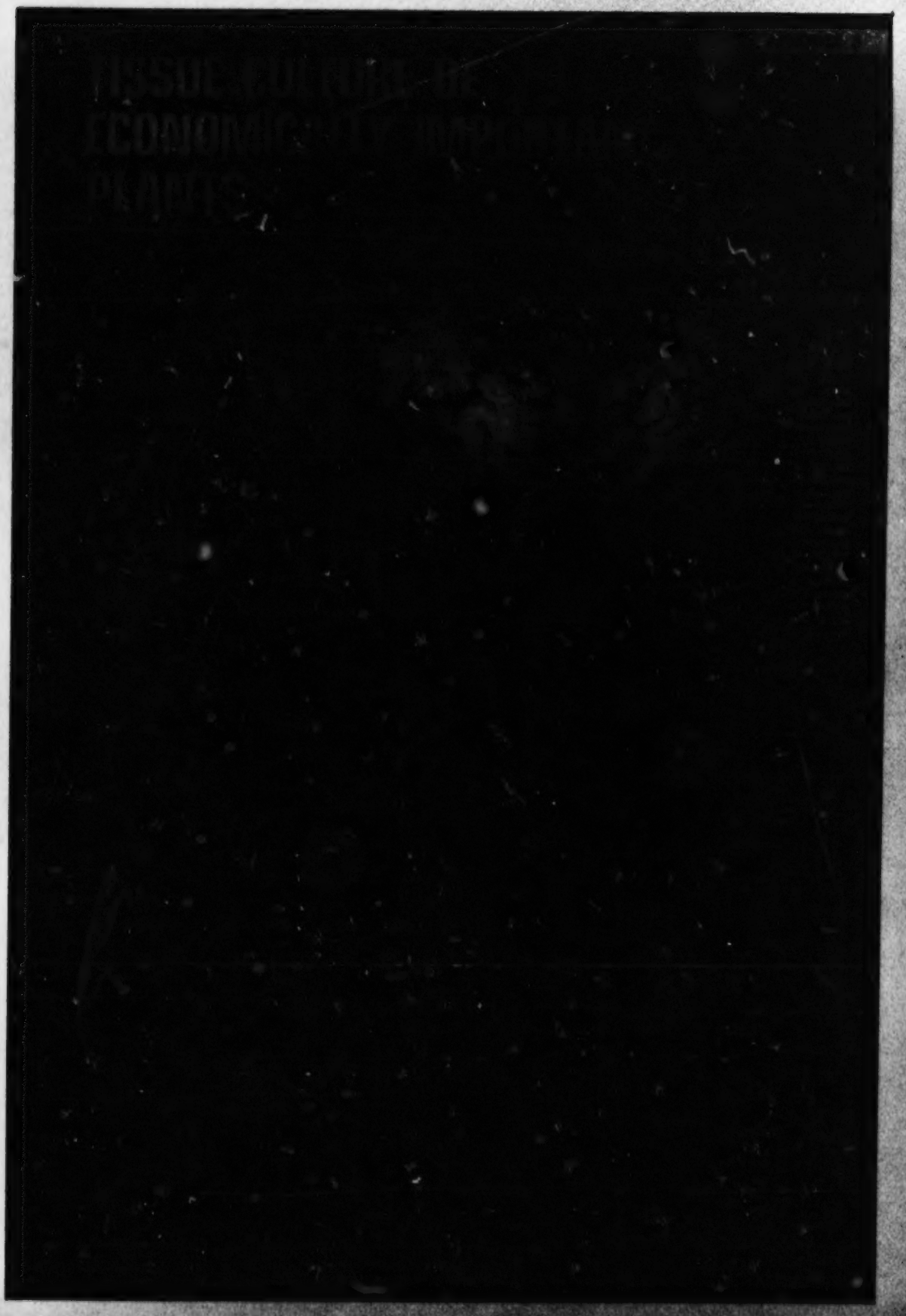
Medicinal Plants Research in the Philippines
Ludivina S de Padua 118

Trends in the Development of Medicinal Plants in Thailand
Nuntavan Bunyapraphatsara and Jutamaad Satayavivad 124

Progress of Research on Certain Tropical Plants of Medicinal Value
Wee Yeow Chin and A N Rao 132

Aspects of Traditional Chinese Medicine and Medicinal Plants
Hsuan Keng 139

Tissue Culture Research on Medicinal Plants in India – Retrospect & Prospect
N S Rangaswamy 143



CONTENTS

PAGE

Opening Address xi

RICE

Regulatory mechanism of shoot formation in rice callus
– *Eizo Maeda, M Inoue and M H Chen* 1

Tissue culture studies in rice improvement
– *G M Reddy* 7

LEGUMES

Legume cell and tissue culture
– *Peter Gresshoff and S S Mohapatra* 11

Induction of genetic variability in grain-legumes through tissue culture
– *Y P S Bajaj and S S Gosal* 25

Tissue culture and prospects for improvement of *Arachis hypogaea* and other oil seed crops
– *D C Sastri, M S Nalini and J P Moss* 42

The winged bean *(Psophocarpus tetragonolobus)*: control of direct organ formation using the thin cell layer concept
– *Henrietta Lie-Schricke and Tran Thanh Van* 58

Studies in the tissue culture of the winged bean
– *A Kovoor, A Brunel, C Landre and C Chardard* 63

Tissue and protoplast culture and plantlet regeneration in legumes
– *H Y Mohan Ram, Usha Mehta and I V Ramanuja Rao* 66

SUGARCANE AND SUGARBEET

Sugarcane improvement through tissue culture and review of progress
– *T Krishnamurthi* 70

Utilisation of tissue culture techniques for the propagation, improvement of sugar contents and induction of salt tolerance in *Beta vulgaris*
– *Ihsan Ilahi* 78

TARO, YAM, GINGER, SPICE PLANTS AND CUCURBITS

Tissue culture of taro
– *Joseph Arditti* 83

Cytological and developmental aspects of callus in *Costus speciosus*
– *Amita Pal and A K Sharma* 85

Propagation of yam – *Dioscorea composita* through tissue culture
– *S K Datta and K Datta* 90

A brief account of *in vitro* studies on Umbelliferous spices
– *Timir Baran Jha, S Chandra Roy and G Chandra Mitra* 94

Morphogenesis in some plant species of the family Cucurbitaceae
– *Tapati Halder and V N Gadgil* 98

BEVERAGE PLANTS

A review on the tissue culture of tea plants and on the utilisation of callus-derived plantlets
– *Chen-tau Wu, T K Huang, G R Chen and S Y Chen* 104

Callus growth and organogenesis in cocoa
– *Lee Sing Kong and A N Rao* 107

FRUIT TREES AND FRUITS

Fruit tree propagation *in vitro*
– *James F Hutchinson* 113

Vegetative propagation, tissue culture and the Malaysian pineapple industry
– *Wee Yeow Chin* 121

Cotyledon tissue culture of some tropical fruits
– *A N Rao, M S Yeow, Nancy Kothagoda and James F Hutchinson.* 124

PALMS

Tissue culture of palms – a review
– *Wooi Kheng Choo, Wong Choong Yew and R H V Corley* 138

Culture of coconut palm tissues with a view to vegetative propagation
– *Jennet Blake and C J Eeuwens* 145

Regeneration of callus from coconut protoplasts
— *T K Haibou and A Kovoor* 149

RUBBER, JUTE AND MEDICINAL PLANTS

Recent developments in tissue culture of Hevea
— *Wan Abdul Rahaman, H Ghandimathi, Rohani Othman and K Paranjothy* 152

Experiments to produce jute plants of desirable types through tissue culture
— *A S Islam* 159

The role of tissue culture in the development of medicinal plants and spices
— *Narong Chomchalow and O Sahavacharin* 162

Aseptic micropropagation of *Cinchona:* prospects and problems
— *Abraham D Krikorian, Madhav Singh and Carol E Quinn** 167

TREE PROPAGATION

Propagation of trees by tissue culture
— *A F Mascarenhas, P K Gupta, V M Kulkarni, U Mehta, R S Iyer, S S Khuspe and V Jegannathan* 175

Tissue culture of *Eucalyptus* species
— *Lakshmi Sita* 180

In vitro plantlet production of some tropical tree species
— *Lee Sing Kong and A N Rao* 185

Vegetative propagation of mature trees
— *J M Bonga** 191

Clonal propagation of forest tree species
— *Stefania Biondi and Trevor A Thorpe** 197

ORCHIDS

Development of orchid tissue culture in S E Asian countries
— *Goh Chong Jin* 205

The use of air flow system in plant tissue and organ culture
— *Y W Cheng and S E Chua* 210

CELL GENETICS, GERMPLASM AND GENEPOOL CONSERVATION

Genepool conservation through tissue work
— *K K Kartha* 213

Embryo and tissue culture for crop improvement, especially of perennials, germplasm conservation and exchange — relevance to developing countries
— *R D Iyer* 219

Recent progress of plant somatic cell genetics in China
— *Hu Han* 231

Evaluation of three genotypes of tomato (*Lycoperscion esculentum* Mill.) for *in vitro* regeneration of chlorophyll chimeras
— *S Seeni and A Gnanam* 237

Genetic conservation and tissue culture
— *R B Singh* 240

Tissue culture, genetic transformation and plant improvement
— *Kamla Kant Pandey** 243

The technology of genetic characters transfer *in vivo*
— *Otto J Crocomo and Neftali Ochoa-Alejo** 250

Prospects of somatic cell genetic method in crop plant improvement
— *Oluf L Gamborg** 259

POLLEN EMBRYOGENESIS AND NUCELLUS

Pollen embryogenesis in *Hyoscyamus niger:* a review
— *V Raghavan** 262

Nucellus as an experimental system in basic and applied tissue culture research
— *N S Rangaswamy** 269

COUNTRY REPORTS

Tissue culture of economic crops in Thailand
— *Thavorn Vajrabhaya* 287

Tissue culture work at Bandung, Indonesia
— *E Noerhadi* 290

The status of plant tissue culture in the Philippines
— *Aurora G del Rosario and E V de Guzman* 293

Tissue culture of local orchid hybrids at the Singapore Botanic Gardens
— *Lim-Ho Chee Lan* 295

ABSTRACTS

Morphogenesis, micropropagation and germplasm preservation of some economic medicinal plants
– *H C Chaturvedi, Meena Sharma and R N Prasad* 301

Studies on the effect of 2,4-D and kinetin on the production of saponin in tissue culture of ginseng (*Panax ginseng* C A Meyer)
– *Kwang-Tae Choi, Myong Won Kim and Young Hee Kang* 302

Propagation of the coconut
– *T Antony Davis* 302

Tissue culture and conservation of genetic resources
– *G G Henshaw* 303

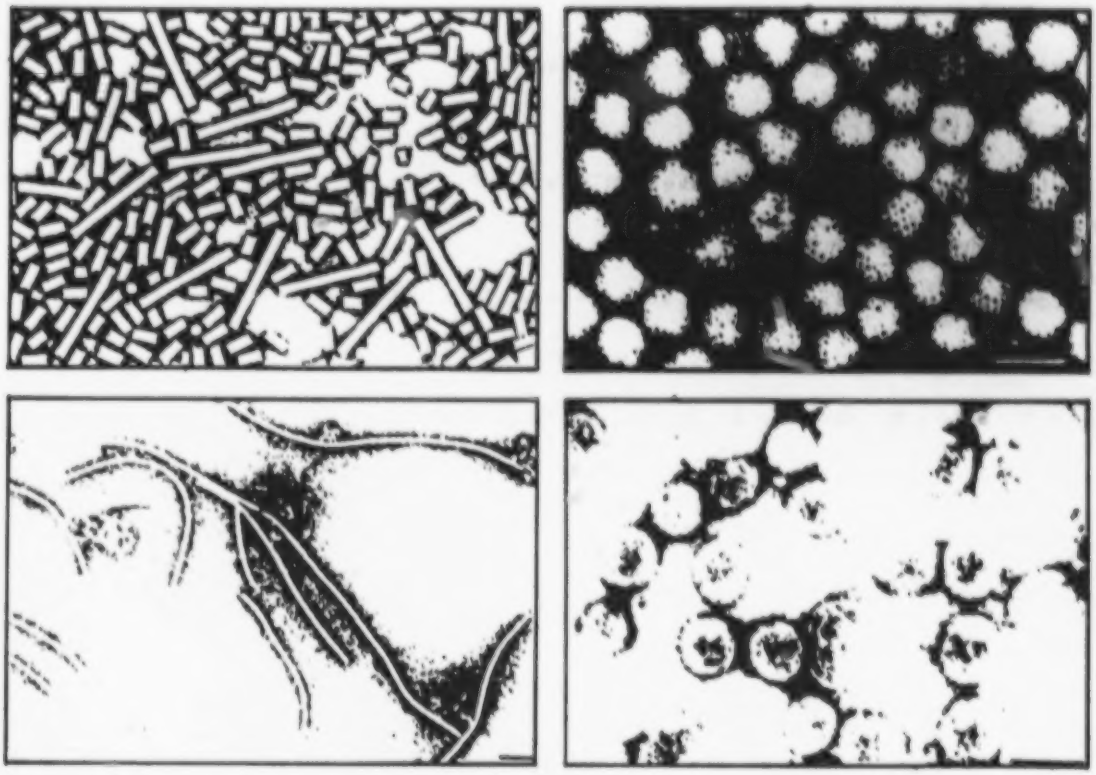
Tissue culture in vegetable crops
– *C G Kuo* 304

Anther culture of rice (*Oryza sativa* L.)
– *Udom Navapanich and Oradee Sahavacharin* 305

Progress of plant tissue culture in Kenya
– *Kimani Waithaka* 305

List of Participants 307

PLANT VIRUSES AND MYCOPLASMAS



PROCEEDINGS OF A WORKSHOP ON PLANT VIRUSES AND MYCOPLASMAS HELD AT THE BOTANY DEPARTMENT, NATIONAL UNIVERSITY OF SINGAPORE, SINGAPORE, 24-27 MAY 1983

CONTENTS

	Page
Preface	
Research and training in plant virology in India - M. Raychaudhuri	1
Plant virus and mycoplasma research in Indonesia - R. Suseno	6
Rice viruses in the tropics and Japan - E. Shikata	16
Virus and mycoplasma diseases in Thailand - D. Choopanya	30
Comparative studies on hop stunt viroid, cucumber pale fruit viroid and potato spindle tuber viroid - T. Sano, M. Sasaki, I. Uyeda, M. Kojima & E. Shikata	38
A recent method for identifying and classifying viruses using complementary DNA - M. Abdul Samad	47
Studies on two types of isolates from Asparagus bean with mosaic symptoms in Thailand - T. Senboku, S.Kiratiya-Angul, W. Srithongchai, K. Kittipakorn, M. Prommin & M. Deema	56
Yam bean mosaic virus in Thailand - D. Choopanya, W. Srithongchai, M. Purinunsri, M. Deema & A. Chanthrasrikul	70

	Page
Control of Citrus greening disease in sweet orange and mandarin - K. Balaraman	73
Infection of Citrus cultivars by leaf-mottling disease - C.I. Gonzales	78
Citrus tristeza virus control through cross protection - K. Balaraman	83
Citrus tristeza virus in Thailand and the production of virus-free plants - S. Attathom, S. Bureekum, Y. Monkolasuk, S. Bhongsatien & K. Rienwarakorn	88
Virus-free plantlets propagated from infected mother tissue - R. Utayanugol & S. Vora-urai	94
Recent developments on the detection, molecular structure and variation of the coconut cadang-cadang viroid - J.S. Imperial	102

Appendices

Welcome Address - Professor A N Rao	109
Opening Address - Associate Professor B Tan	113
Acknowledgements	116
List of Participants/Observers	117
Group Photograph	120

PROCEEDINGS OF THE SEMINAR SCIENTIFIC APPROACH TO TRADITIONAL MEDICINE

Dewan Konferensi,
Bangunan PPPL,
Universiti Pertanian Malaysia
Serdang, Selangor.
30hb April, 1983.

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ISI KANDUNGAN

NO.	TAJUK	MUKA SURAT
1.	CURRENT USES OF MEDICINAL PLANTS (Syed Mohsin Syed Sahil)	1
2.	VEGETABLES AND FLAVOURING (ULAM) WITH MEDICAL USES (Suhaila Mohamed)	4
3.	KAJIAN BIOKIMIA TERHADAP JAMU (Faridah Abdullah dan Aximahtol Hawariah Lope Pihie)	18
4.	PENDEKATAN DI DALAM PENCARIAN PENGUBAHSUAI RASA MANIS DARI TUMBUHAN TEMPATAN (Md. Nordin Hj. Lajis)	19
5.	TOXICOLOGICAL AWARENESS OF MEDICINAL PLANTS (Nik Aziz Sulaiman)	20
6.	ASPEK EKOLOGI DAN BOTANI DALAM KAJIAN TUMBUHAN UBATAN (A. Latiff Mohamed)	28
7.	PHYTOCHEMICAL STUDIES ON MEDICINAL PLANTS (Ikram Said)	35
8.	PHARMACOLOGICAL APPROACH IN SCREENING OF BIOLOGICAL ACTIVE INGREDIENTS IN PLANTS (Yeoh Peng Nam)	42
9.	SESI PERBINCANGAN AHLI-AHLI PANEL	46
10.	LAMPIRAN I	52
11.	LAMPIRAN II	60
12.	LAMPIRAN III	84

PROCEEDINGS OF THE SYMPOSIUM ON RESEARCH IN BIOLOGY AND BIOTECHNOLOGY IN DEVELOPING COUNTRIES

NOVEMBER 2 — 4, 1983

(SELECTED PAPERS)

ASIAN NETWORK FOR BIOLOGICAL SCIENCES

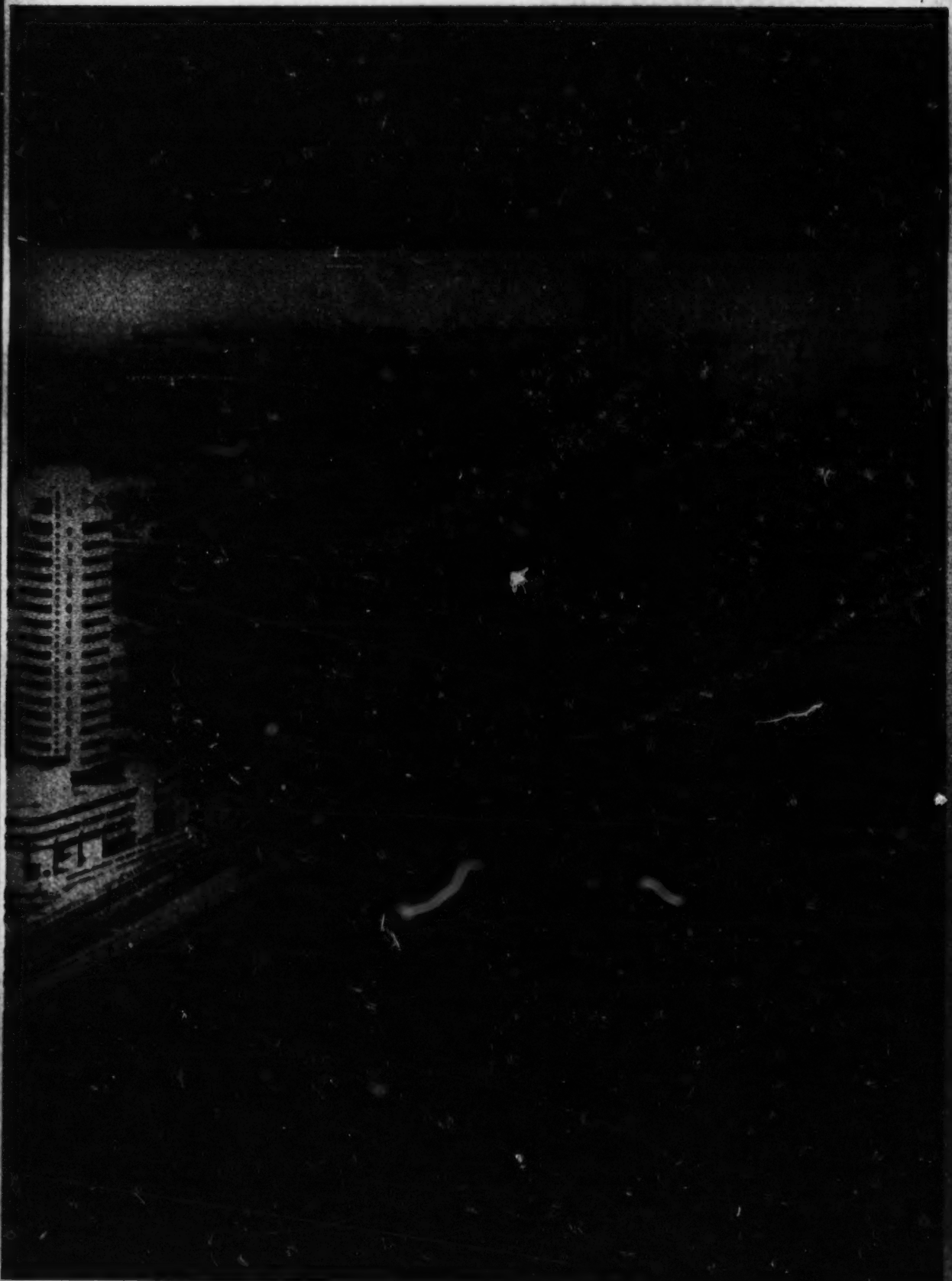
BOTANY DEPARTMENT N.U.S.

ZOOLOGY DEPARTMENT N.U.S.

SINGAPORE SCIENCE CENTRE

CONTENTS

	PAGE
WELCOME ADDRESS – Chua Sian Eng, President, Singapore Institute of Biology	1
WELCOME ADDRESS – S Radhakrishna, Scientific Secretary, COSTED	1
OPENING ADDRESS – Dr Tay Eng Soon, Minister of State for Education, Singapore	2
SELECTED PAPERS	
The Role of Biotechnology in the Economy of Developing Countries – John E Smith	3
Gene Transfer and Somaclonal Variation for Plant Improvement – R D Brock	8
Recent Advances in Biotechnology with Special Reference to Developing Countries – K F Gregory	13
The Application of Recombinant DNA Techniques for the Study of Human Genetic Diseases – J.W.O. Tam, K.C. Tan-Un, Y.K. Woo and V.M.S. Lam	20
Brem Bali Fermentation – Indiawati Gandjar, Dewi S. Slamet and Isworo Rukmi K.	26
ABSTRACTS	
Current Research in Biotechnology in India – H. Sharat Chandra	29
Biotechnology of Interferons: The Transition from Natural to Recombinant Human Interferon – Y.H. Tan	29
Recombinant'DNA Derived Human Interferons – Burld Colby	29
New Sources of Single Cell Protein Yasuji Minoda	30
CLOSING SESSION OF SYMPOSIUM	30
PROGRAMME	31
ACKNOWLEDGEMENTS	39
ORGANISING COMMITTEE	40
LIST OF PARTICIPANTS	41



BEST COPY AVAILABLE

CONTENTS

Foreword i

List of Participants and Contributors ii

Welcoming address by the Chairman, Organising Commitee, Dr. A. Latiff v

Towards the ecological analysis of cities
J. R. E. Harger 1

Urbanisation and biophysical environment of Kuala Lumpur. S. Sham, A. Latiff, M. A. Badri, A. Muhamad & M. I. Yazid 3

Urbanisation and environment of Singapore. A. N. Rao 39

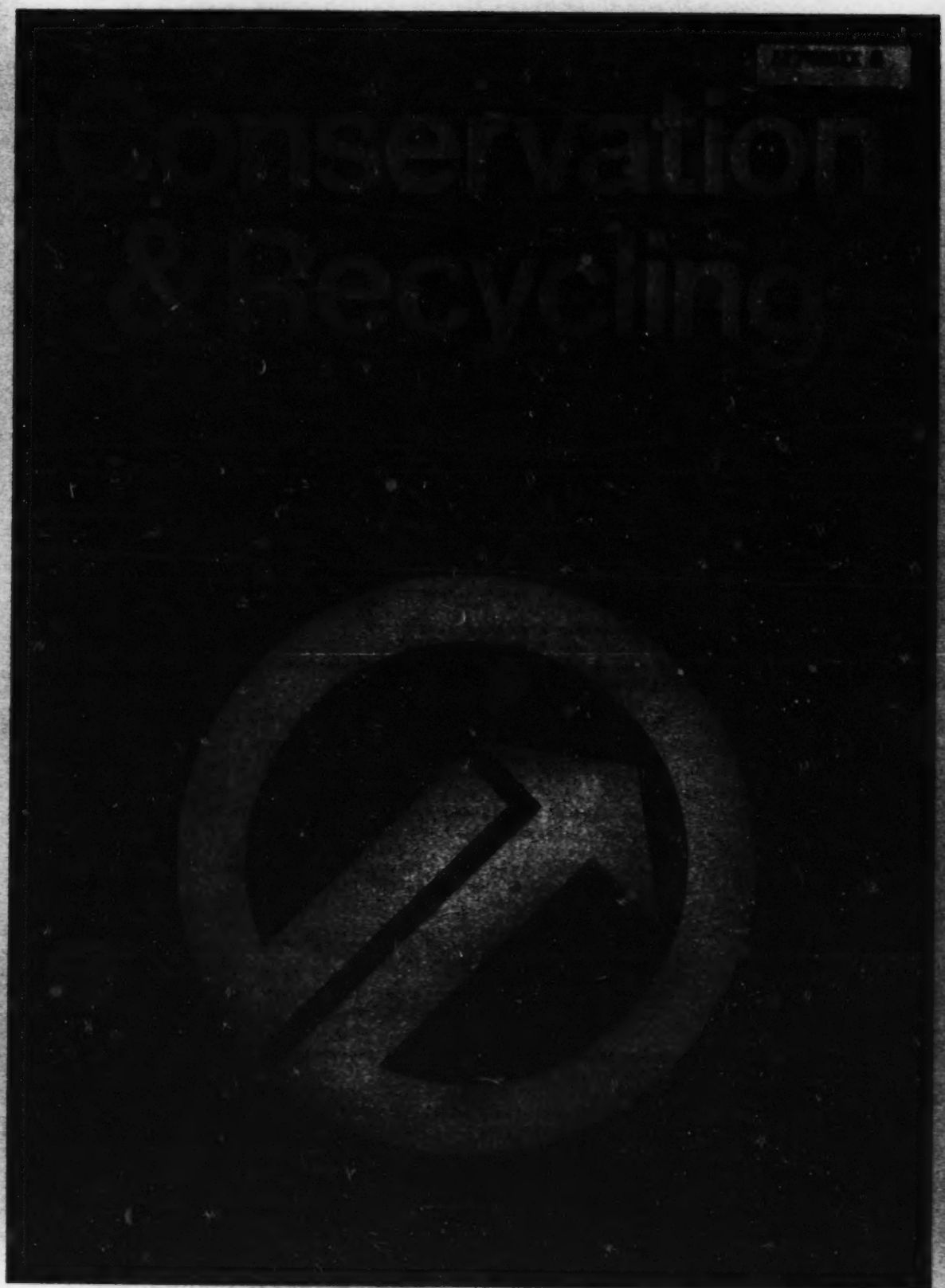
An environmental overview of Jakarta.
B. Sukmadi & W. M. Ardjo 63

Environment, economy and land use of Dhaka with special reference to slums and squatters.
N. Islam 73

Some aspects of man, environment and planning in Seoul. K.G. Kim 93

The biophysical and socio-economic characteristics of contemporary Hong Kong. P. Hills 101

An investigation into the nature and extent of the urban boundary-layer of Kuala Lumpur and the Kelang Valley region, Malaysia:
A proposal. *S. Sham 119



BEST COPY AVAILABLE

CONTENTS

Preface		63
I COLLECTION, TREATMENT AND DISPOSAL		page
S.H. Wong	On-site storage and collection of solid wastes in Hong Kong (Abstract only)	65
Jun Ui	An overview on solid waste and hazardous waste in Japan	67
Tsai-Hong Lo	Disposal of municipal solid wastes by incineration in Hong Kong	73
L.H. Wang and C.Y. Chen	Studies on ecological aspects of incineration of solid wastes in Taipei City (Abstract only)	83
P.M. Sivalingam	Ocean disposal and land reclamation problems of Penang, Malaysia	85
R.M. Bell, G.D.R. Parry and A. Gildon	Isolating metal contaminated waste by covering potential upward migration of metals into surface soil and vegetation	99
II MANAGEMENT, PLANNING AND ECOLOGICAL ASPECTS		
S.B. Reed	Monitoring and long-term planning: essential ingredients of waste management	107
J.E. Boxall and K.K. Yung	Waste arisings in Hong Kong	115
J.C.K. Hui	A review of pulverised fuel ash production, utilisation and disposal in Hong Kong	133
Mohamad Soerjani	Present waste management in cities in Indonesia	141
P. Hills	Urban Planning perspectives on solid waste disposal	149
M.N. Rao	An ecologically balanced system for urban waste disposal (Abstract only)	157
C. Puredy and D. Ghosh	Resource-conserving traditions and waste disposal: the garbage farms and sewage-fed fisheries of Calcutta	159
C. Puredy	Socio-political aspects of the recovery and recycling of urban wastes in Asia	167
III RECYCLING		
S.T. Chang	Conversion of agricultural and industrial wastes into fungal protein	175
H.N. Lohani	Recycling potentials of solid waste in Asia through organised scavenging	181

CONFERENCE PROCEEDINGS

1984

3rd Asia Pacific Conference on Electron Microscopy

29 August — 2 September 1984

Singapore

C O N T E N T

A. Plenary Lectures

Physics - H Hashimoto "Recent development and future of atom resolution electron microscopy" 3

Biology - D J Goodchild " Bio-medical applications of
Industrial electron microscopy" 19

Application - G Thomas "Transmission electron microscopy of inorganic materials" 28

Instrumentation - S Maruse "Instrumentation-Recent status of high voltage electron microscopes" (Abstract)..... 49

B. Physical Science Section

a) Diffraction Contrast and High Resolution Electron Microscopy

1. "Diffraction Contract using weak reflections", (Keynote Lecture) D J H Cockayne 54

2. "Pseudo weak phase object approximation in HREM", F H Li and D Tang 60

3. "μμ-diffraction simulation", Jing Zhu and H Q Ye 62

4. "Fine structures of antiphase domains boundary tubes in B^2 ordered alloys", C T Chuo, P B Hirsch, P M Hazzledine and G R Anstis 64

5. "The Influence of beam size on the dynamical extinction condition", P Ling 67

6. "TEM image of overlapped Ni_3Al precipitate particles", C T Hu and P Ling 69

7. "Spinodal decomposition in (Ti,Su) O_2 examined by IMV HRTEM", S Horiuchi, F Izumi, T Kikuchi and K Uchida 71

8. "Combined CBED and HREM study of complex metal oxides", C Y Yang and K K Fung 73

9. "Quantitative studies of contrast from stacking faults", Z Liu, D J H Cockayne and A R Wilson 75

10. "The Influence of Inelastic scattering on high resolution Electron microscope images of thick crystals", H Endoh and H Hashimoto 77

11. "Magnetic contrast due to dislocation movement in NiO single crystal", S Maruyama and J Philbert 79

12. "Space group determination of $Li_20.3\ Mb_2\ O_5$ by convergent beam electron diffraction", C Y Yang and K K Fung 81

14. "Freeze-fracture studies of the physical state of membrane lipids", G Cox, T Dibbayawan and D Bishop (Abstract) 279

15. "Development of sapphire knife for ultramicrotomy for biological electron microscopy", K Suzuki, K Aihara, S Sato, T Oguro, H Hirohata, G Yajima, H Mori, Kat Matsumoto and T Fujisawa 280

16. "An attempt to incorporate systematized diagnostic electron microscopy", K Aihara, G Yajima, K Suzuki, S Satoh, Y Hirohata, Y Han, O Asgen, O Kawanami and M Tanaka 282

17. "An attempt to incorporate quantitative analytical methodology in diagnostic electron microscopy, a simulated study with experimental model", Y Hirohata, K Aihara, K Suzuki, G Yajima, H Kobayashi, Y Tomita, Han and Asgen 284

18 "Development in micro-computer assisted automatic tissue processing device in biological electron microscopy", K Aihara, G Yajima, T Tomita, K Kobayashi, K Suzuki, Y Hirohata, H Mori and K Matsumoto 286

b) Analysis

1. "Elemental analysis and imaging of biomedical specimens by total system analytical electron microscope", (Keynote Lecture) V Mizuhira 290

2. "Ultrastructural studies of the organic matrix in kidney stones from children", (Invited paper) P T Cheng, A D Reid and K P H Pritzker 310

3. "X-ray microanalysis of vanadium and iron in the test cells of Ascidian Eggs", H Hori 312

4. "A scanning electron microscopic study on the initial invasion of neuroblastoma cells in the choriollantoic membrane of the chick", E C Chew, T K Lam and H J Hou-Chan 314

5. "X-ray microanalysis of calcium in the ischemic skeletal muscle cells", C S Zhong, Y P Ling, Z Q Wu and L E Chen 316

6. "EDX-analysis of Indian hairs", J K De and S G Pal 318

c) Animals

1. "Spermatoza", (Keynote Lecture) B A Afzelius 322

2. "Application of electron microscopy in veterinary medicine", (Invited Lecture) A L Ibrahim and May C Lai 328

3. "An application of rapid freezing followed by freeze-substitution fixation to thin section study of animal cells", (Invited Paper) A Ichikawa 332

4. "Fatty liver of mudskipper, boleophthalmus Pectinirostris", K C Liu and L M Mai 334

5. "Some ultrastructure observations in protein calorie malnourished rats", R Sarasa Bharati and S Arumugam (Abstract) 336

6. "Ultrastructures of earthworm podocytes", S G Pal and P K Dinda 337

7. "Surface topography ultrastructure of the tegument of adult Schistosoma Japonicum and Schistosoma Mekongi (Chinese and Philippines)", P Sobhon, P Saitongdee, V Khunborivan, C Wanichanon, P Vongpayabal, P Bubphaniroj, H C Yuan, E S Upatham and M Kruatrachue 339

8. "Ultrastructural studies of the interface of the omentum and the implanted chamber", H Hashiguchi, B C Loh, and T Yoshioka 342

9. "Byssogenous foot and byssus of 2 mytilid bivales", P P Biswas and S C Pal 344

10. "Ultrastructure evidence of spared root regeneration in cats", J C Liu, K P Shaw and S D Wang (Abstract) 346

11. "Constitution of connective tissue around the cappillary of chick pecten oculi", T Amemiya 347

12. "Electron microscopic observation on the lung of the African lungfish", A Kimura, T Gomi, H Tsuchiya, T Hashimoto, and H Fujita 349

13. "In vivo and in vitro binding of ^{3}H - estradiol to eosinophilic leucocytes in the uteri of rat and mouse", Y Sugira and V Mizuhira (Abstract) 351

14. "Cytochemical demonstration of several enzymatic activities in crayfish hypodermis and gastrolith epithelium correlated with the molting cycle", M Ueno and V Mizuhira (Abstract) 352

15. "Na+-pump sites and intercelluar junctions in the stria vascularis of the guinea pig cochlea", H Seguchi, T Kobayashi and J Tavara 353

16. "Studies in the granulocytopoiesis in fresh water fish", H Tsuchiya, T Gomi, A Kimura, T Hashimoto, T Hirahata, H Ishizuka and K Higashi 355

17. "A scanning electron microscopic study of the mode attachment of Helminth parasites to host tissues", V Zaman 357

18. "Ultrastructure of the Integument in Echinorhynchus Truttae", R S Choe and K S Shin 359

d) Plants

1. "Electron microscopic studies on the hyphal distribution of Ustilago esculenta P Henn in swollen culm of Makomo", T Saito and S Nakamura (Abstract) 362

2. "Morphological structure of cellulose microfibrils in Valonia", H Harada, J Sugiyama, Y Fujiyoshi and N Uyeda 363

3. "Ultrastructure and host-endophyte interactions in Alnus formosana root nodules", S S Tzean and C L Chu 365

4. "Observation of acidic sensitive step in the rhizobial process", L P Lin, R H Chen and H M Lin 367

5. "Distribution of creosote oil and iron pigment in PEC-30 treated eucalyptus obliqua poles", D M Dwarte, D J H Cockayne and J B Watkins 369

6. "An SEM study silica inclusions in woods from tropical Asia", H Saiki 371

7. "Cytological changes of the parenchyma cell contents associated with heartwood formation of Sugi (Cryptomena japonica D. Don)", T. Nobuchi and H Harada 373

8. "Studies on isolated Tobacco protoplasts", Y R Chen (Abstract) 375

9. "The localization of Na^+ and Cl^- in the salt gland of the mangrove tree, Avicenna Marina", Y Yaguchi and S Nakamura (Abstract) 376

e) Cell and Organelles

1. "Cell: Recent advances in electron microscopic enzyme cytochemistry", (Keynote Lecture) K Ogawa, T Fujimoto, K Fujimoto, K Yamamoto and T Noda 378

2. "Labelling of amoeboid microglial cells in the corpus callosum of postnatal rats following intravenous injection of horseradish peroxidase", K Charanjit 385

3. "Freeze-fracture of liposome, milk fat globules and adipocytes", S Itagaki and T Makita (Abstract) 387

4. "Fine structural changes of a crustacean gill epithelium associated with acclimation to various salinities", S Kikuchi 388

5. "Freeze-fracture study of membrane systems in the absorptive cells of the hindgut goldfish (Carassius auratus)", T Yamamoto, T Arima, Y Shibata, H Iida, Y Hirakawa 390

6. "Fine structural and cytochemical observations on the seminal vesicle epithelium in the Yellow-bellied country-rat", J H Sun (Abstract) 392

7. "Three-dimensional observation of the cytoskeleton of cultured cells", T Katsumoto and T Inoue 393

8. "Three-dimensional observations of intracelluor structures of cultured by scanning electron microscopy", T Inoue, T Katsumoto, H Osatake and K Tanaka, ... 395

9. "Application of scanning electron microscope (SEM) technique in the study of oral microflora of man in tropics", R Sen, S C Santra and S G Pal 397

10. "Ultrastructure of bacterioid - containing cells of earthworm", P K Dinda and S G Pal 399

11. "Formation of the osmiphilis lamellated bodies in type II alveolar epithelial cells", T Gomi, A Kimura, H Tsuchiya, T Hashimoto and H Fujita 401

12. "Electron microscopic radioautography of extranuclear nucleic acid synthesis in mitochondria and peroxisomes of cultured cells under experimental conditions", T Nagata, Y Fujii and N Usuda 403

f) Viruses & Chlamydia

1. "Morphological characterization of Chlamydia psittaci isolated from pet birds and production of monoclonal antibody available for the cytodiagnosis", A Matsumoto and H Bessho 406

2. "Early events in murine leukemia virus infection by electron microscopy", T Goto, T Uyesaka, K Sugita, S Imura, Y Kojima and M Nakai 408

3. "Scanning electron microscopy in Newcastle disease studies in Malaysia", M C Lai and A Latif Ibrahim 410

4. "Virus-like particles in the sick snake head fish (Ophicephalus striatus) during a disease epidemic in Thailand", W Wattanavijarn, T Tesprateep, V Sukolayong, L Ousvaplangchai, R Rattanaphani, J Tangtrongpiroj and T Thirapatsakun 412

5. "Ultrastructural and immunoelectron microscopic studies on Japanese monkey derived type C virus particles related to human adult T-Cell leukimia virus", Y Ohtsuki, I Miyoshi, H Taguchi and T Akagi 414

6. "Intranuclear inclusion in human firoblast infected with Herpes Simplex", C N Sun and P N Morgan 415

7. "Electron microscopic studies of some morphological parameters of normal and virus transformed cells in culture", E M Tenang and J F Lamb 417

8. "Ultrastructure of dengue viruses in diffrent host cells", S Sriumairatna, N Bhamarapravati and S Yoksan 419

g) Human Diseases

1. "Cytochemical & biochemical studies of the enzyme makers in human hepatoma cell lines", C F Chao, L P Ting, Y Y Liu and C Chen 424

2. "Acute postinfectious glomerulonephritis in adult: A clinicopathogical correlation study", Y S Ho, Y C Tu, S D Shieh and H W Huang 425

3. "The study of colonicmucosa in patients with chronic ulcerative colitis by magnifying colonoscopy and SEM", C Y Wang, L H Huang and J L Sung (Abstract) 427

4. "Some ultrastructural observations in dimorphous leprosy", S Arumugam and R S Bharati (Abstract) 429

5. "Interaction between normal human monocytes and schistosomula of Schistosoma Japonicum: An ultrastructural observation", N C Gonzaga, R M Olveda, B O Libranda, M C Baccay and Y Kozuka 430

6. "Morphology of elementary body of obligate intracelluar parasite chlamydia psittaci", A Matsumoto (Abstract) 432

h) Effects of Medical Treatment

1. "An ultrastructural study of the neuronal changes in the myenteric ganglia of the stomach of the monkey (Macaca fascicularis) following unilateral vagotomy", U D Vaithilingam 434

2. "Electron microscopic study of the parathyroid gland in the isoproterenol treated golden hamster", Y Iwasaki, S Shoumura and H Isono 436

3. "The morphological response of Pseudomonas aeruginosa and Escherichia coli to Cefsulodin", T Nishino, T Tanino, M Nakao, N Gotoh and M Otsuki (Abstract) 438

4. "Electron microscope studies on the structure of ultrasonically treated collagen fibres in relation to their tensile properties", B Lokanadam, U Ramamoorthy and N Ramanathan 439

5. "Electron microscopy of normal & Gossypol acetic acid treated spermatoza of indian buffalo babulus bubalis", S R Bava ... 441

CONTENTS

PART ONE – INTRODUCTION

1. EDUCATIONAL AND SOCIAL VALUES OF OUT-OF-SCHOOL SCIENCE . . 14

Peter Kelly

In-school and out-of-school
Social and personal needs of the future
Preparation for community life

PART TWO – GENERAL ISSUES

2. SCHOOL VERSUS OUT-OF-SCHOOL – AN ARTIFICIAL DICHOTOMY . . . 22

William V. Mayer

Perceptions of schooling
Two-way interaction between school and society
Attempts at synthesis
Science and society
The danger of over-simplification
The gap between promise and fulfillment
"Attentiveness" to science and technology
Science concepts in non-science discipline
The need to develop appropriate attitudes and values
The special problem of teaching values
The need to understand science – the danger of false perceptions
Confusion between science and pseudoscience
The danger of pressure groups in society
In-school activities should incorporate out-of-school activities

3. INFLUENCES OF OUT-OF-SCHOOL ACTIVITIES ON CONCEPT FORMATION IN SCIENCE 36

Gerhard Schaefer

The concept of "equilibrium"
The concept of energy
Exclusive and inclusive thinking

4. BIOLOGY OF LEISURE 47

A.N. Rao

Sociological versus scientific views of leisure
Land use for leisure activity
Studies of watching television as a leisure activity
Studies of urban and rural patterns
International differences
The special problem of tourism
Lack of scientific aspects in planning for leisure
Implications for out-of-school activities

5. PROBLEMS AND PROSPECTS OF POPULARISING SCIENCE AND TECHNOLOGY THROUGH NON-SCHOOL ACTIVITIES – SOME THOUGHTS ON THE AFRICAN SITUATION 53

Michael Atchia

Classification
The African scene
The integration of cultures
Non-school education
Advantages of non-school education in Africa
What to popularise?
How to popularise?
Example of appropriate technology

6. THE CONTINUING PROFESSIONAL DEVELOPMENT OF SCHOOL TEACHERS FOR OUT-OF-SCHOOL SCIENCE ACTIVITIES 57

G. Rex Meyer

Types of out-of-school science activities in the formal sector
Problems of out-of-school science
Partial solutions in Australia
A general solution – professional staff development
Teaching competencies needed for out-of-school science
Implementing staff development
Conclusion

PART THREE – SELECTED REGIONAL TRENDS AND CASE STUDIES

7. DEVELOPMENT OF OUT-OF-SCHOOL ACTIVITIES IN SCIENCE EDUCATION IN JORDAN 70

Elias A-H. Baydoun

Aims of out-of-school science
Problems of achieving the aims
Solving the problems

8. A CHECKLIST OF OUT-OF-SCHOOL SCIENCE ACTIVITIES IN KUWAIT . . 73

M.S. Subbarini and A.R. Kablaoui

Types of out-of-school activities in Kuwait
Evaluative appraisal
Future development

9. OUT-OF-SCHOOL SCIENCE ACTIVITIES IN MALAYSIA 76

Cheong Siew Yoong

Patterns and programmes in science education
Place and aims of out-of-school activities in the overall science education programme
Specific activities and programmes
Problems in the implementation of out-of-school science activities
Overall evaluative appraisal
Future development potential

10. FIELD TRIPS AND SCHOOL CAMPS – DEVELOPMENTS IN BRITISH COLUMBIA 83

Fred Gornall

Field trips
School camps
Suggestions for reorganization

11. OUT-OF-SCHOOL ACTIVITIES IN JAPAN FOR PRIMARY AND SECONDARY SCHOOLS 89

Kozo Imahori

Education and development in Japan
Changing aspirations of Japanese children
Curriculum reform
Recent sociological research
Promotion of out-of-school activities
Problems of out-of-school activities in Japan
Conclusion

12. OUT-OF-SCHOOL SCIENCE ACTIVITIES – RETROSPECT AND PROSPECT IN THE CARIBBEAN 101

Winston K. King

Rationale for out-of-school science activities
Education for scientific literacy
Changing Attitudes
Recreation
Aims of out-of-school science
Implication of out-of-school science for educational systems in the Caribbean
Some out-of-school science activities in the Caribbean
Summary

13. OUT-OF-SCHOOL BIOLOGY ACTIVITIES IN SINGAPORE 109

I A CHECKLIST OF OUT-OF-SCHOOL FACILITIES IN SINGAPORE

A.N. Rao

National Museum
Fort Siloso
Coralarium
Jurong Bird Park
Maritime Museum
Singapore Institute of Biology

II THE SINGAPORE SCIENCE CENTRE

Leo Tan and Tok Shiew Foo

Out-of-school scientific activities in Singapore
Growth of the Singapore Science Centre
Educational programmes
Exhibit programme
School science educational programme
Science publication programme
Other innovative activities
Conclusion

III THE USE OF THE BOTANIC GARDENS FOR NON-FORMAL EDUCATION

Siew Yin Ng

A museum of living plants
Nature ramble

IV THE USE OF THE SINGAPORE ZOOLOGICAL GARDENS AS AN EDUCATIONAL RESOURCE

Bernard Harrison, Manomani Thirunavukkarasu and Sui-Hwa Lo

Background
Disseminated information
Dissemination of information – for the public in general
Dissemination of information – to visiting school groups

V THE MALAYAN NATURE SOCIETY

P.N. Avadhani

14. OUT-OF-SCHOOL SCIENCE ACTIVITIES IN THE FEDERAL REPUBLIC OF GERMANY – AN HISTORICAL NOTE 127

Gerhard Schaefer

PART FOUR – CONCLUSION

15. THE PLACE OF OUT-OF-SCHOOL SCIENCE IN GENERAL EDUCATION – CURRENT TRENDS AND FUTURE PROSPECTS 133

G. Rex Meyer

The problem of definition
Types of out-of-school science activities
The purpose of out-of-school science
Aims and objectives
Content and methods of out-of-school science
Organizational and management issues
Teacher education
Assessment of learning outcomes
Evaluation of out-of-school science programmes
Future prospects

INDEX OF NAMES 151

SUBJECT INDEX 154

INTERNATIONAL SYMPOSIUM ON RECYCLING OF ORGANIC WASTES FOR FERTILIZER, FOOD, FEED AND FUEL

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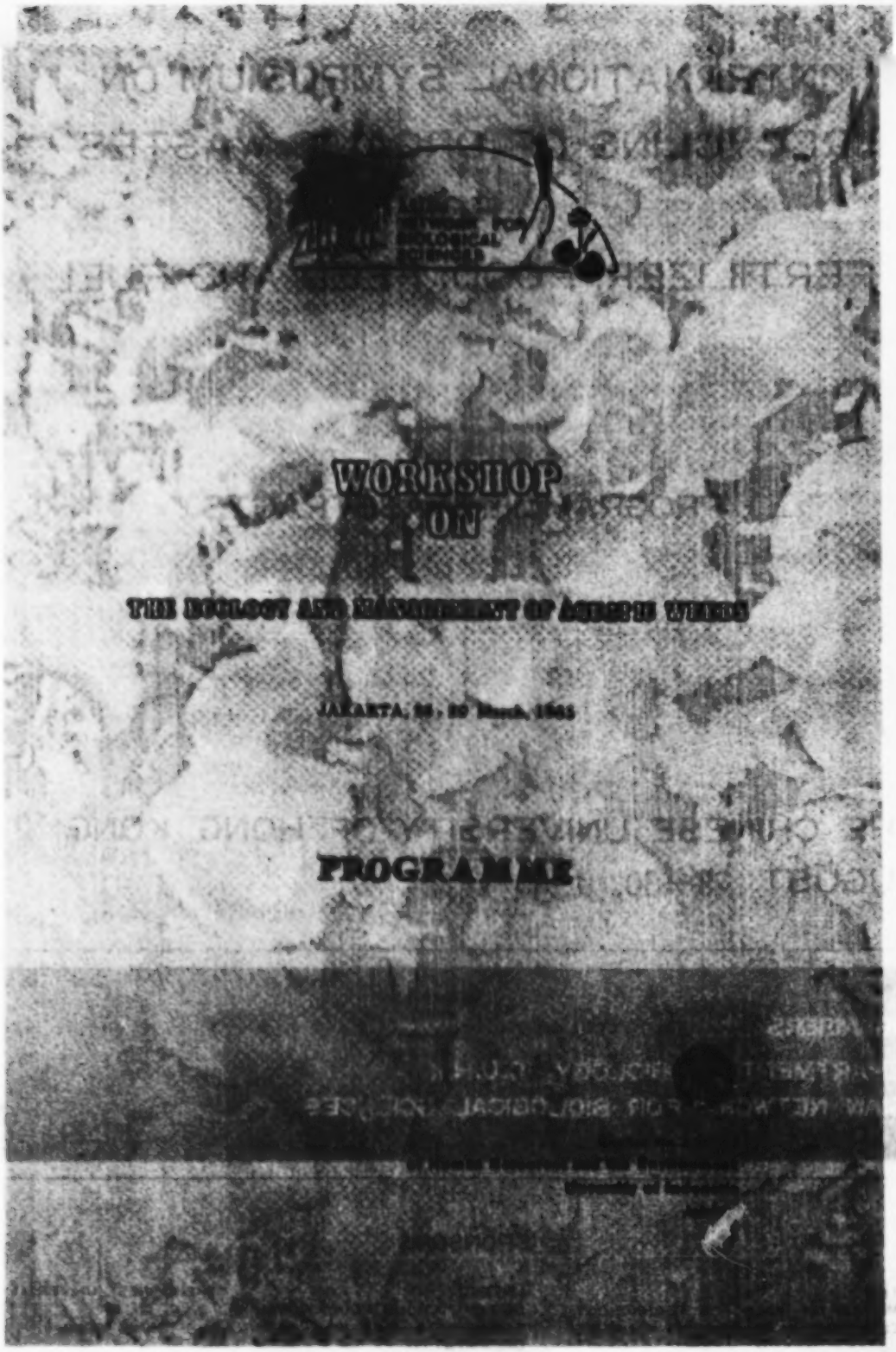

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